



## UF540

Preliminary

Power MOSFET

### 27A, 100V N-CHANNEL POWER MOSFET

#### DESCRIPTION

The UTC **UF540** is an N-channel enhancement mode power MOSFET using UTC's advanced technology to provide the customers with a minimum on-state resistance and high switching speed.

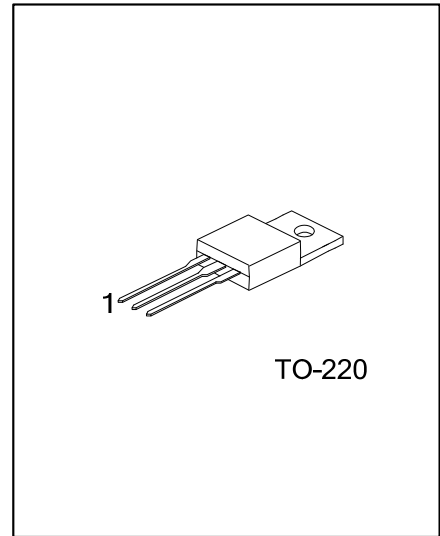
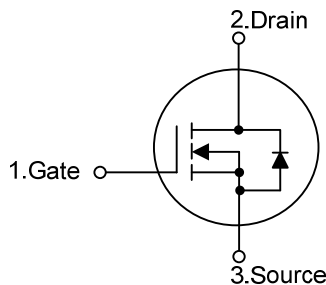
The UTC **UF540** is suitable for AC&DC motor controls and switching power supply, etc

#### FEATURES

\*  $R_{DS(on)} < 85m\Omega$  @  $V_{GS} = 10V, I_D = 15A$

\* High Switching Speed

#### SYMBOL



#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF540L-TA3-T	UF540G-TA3-T	TO-220	G	D	S	Tube

Note: Pin Assignment: G: Gate D: Drain S: Source

<p>UF540L-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>		<p>(1) T: Tube</p> <p>(2) TA3: TO-220</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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# ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage (Note 2)			V <sub>DSS</sub>	100	V
Gate-Source Voltage			V <sub>GSS</sub>	±20	V
Drain Current	Continuous	T <sub>C</sub> =25°C	I <sub>D</sub>	27	A
		T <sub>C</sub> =100°C		17	A
	Pulsed		I <sub>DM</sub>	108	A
Power Dissipation (T <sub>C</sub> =25°C)			P <sub>D</sub>	125	W
Junction Temperature			T <sub>J</sub>	+150	°C
Storage Temperature			T <sub>STG</sub>	-55~+150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2.  $T_J = +25\sim+150^{\circ}\text{C}$

# ■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case	$\theta_{JC}$	1.0	$^{\circ}\text{C/W}$

# ■ ELECTRICAL CHARACTERISTICS ( $T_C=25^{\circ}\text{C}$ , unless otherwise noted)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		$BV_{DSS}$	$I_D=250\mu A, V_{GS}=0V$	100			V
Drain-Source Leakage Current		$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$			250	$\mu A$
Gate-Source Leakage Current	Forward	$I_{GSS}$	$V_{GS}=+20V, V_{DS}=0V$			+500	nA
	Reverse		$V_{GS}=-20V, V_{DS}=0V$			-500	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0		4.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=10V, I_D=15A$			0.085	$\Omega$
DYNAMIC PARAMETERS							
Input Capacitance		$C_{ISS}$	$V_{GS}=0V, V_{DS}=25V, f=1.0MHz$		1960		pF
Output Capacitance		$C_{OSS}$			250		pF
Reverse Transfer Capacitance		$C_{RSS}$			40		pF
SWITCHING PARAMETERS							
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD}=45V, I_D=15A, V_{GS}=10V, R_{GEN}=5.1\Omega$ (Fig.1, 2) (Note 2)		11		ns
Rise Time		$t_R$			35		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			39		ns
Fall-Time		$t_F$			35		ns
Total Gate Charge		$Q_G$	$V_{DD}=35V, I_D=27A, V_{GS}=10V,$		71		nC
Gate to Source Charge		$Q_{GS}$			14		nC
Gate to Drain Charge		$Q_{GD}$			21		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage		$V_{SD}$	$I_S=27A, V_{GS}=0V$		2.0	2.5	V
Body Diode Reverse Recovery Time		$t_{rr}$	$I_S=4.0A, dI_S/dt=25A/\mu s$		300		ns
Maximum Body-Diode Continuous Current		$I_S$				27	A
Maximum Body-Diode Pulsed Current		$I_{SM}$				108	A

Notes: 1. Pulse width limited by  $T_J$

2. Switching time measurements performed on LEM TR-58 Test equipment

## ■ TEST CIRCUITS AND WAVEFORMS

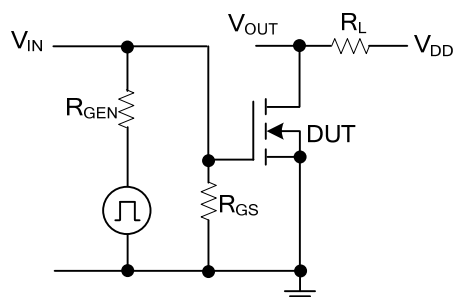


Fig.1 Switching Test Circuit

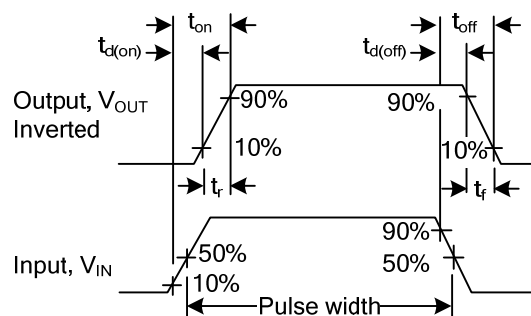


Fig.2 Switching Waveforms

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